

## A NOTE ON *DROSOPHILA ALBOSTRIATA* MALLOCH (DIPTERA: DROSOPHILIDAE)

By Ian R. Bock

Dept. Genetics and Human Variation, La Trobe University, Bundoora, Vic. 3083.

### Abstract

*Drosophila albostrata* Malloch is a rare endemic species previously known only from a few female specimens. The male genitalia are figured and additional distribution records given. The structure of the male genitalia suggests possible relationships with another endemic species, *D. fumida* Mather. *D. albostrata* has been collected in semi-arid areas, suggesting a greater resistance to heat and desiccation stresses than is usual amongst Australian *Drosophila* species.

### Introduction

*D. albostrata* Malloch, 1924 is a particularly striking out nevertheless little-known endemic species of *Drosophila* hitherto recorded from only two localities in southern Queensland. The type locality is Eidsvold (25°32'S, 151°8'E). Further specimens have also been recorded from the vicinity of Glen Elgin Homestead (24°31'S, 149°11'E). The few specimens recorded to date have not included any males, and although the species is assigned to the subgenus *Scaptodrosophila* its systematic position within that large group has been regarded as obscure (Bock, 1976).

Through the courtesy of Prof. J. S. F. Barker (University of Sydney) and Mr G. B. Monteith (University of Queensland) I have obtained further specimens of *Drosophila albostrata* including several males. The male genitalia of this species are described and figured below and some further comments are offered on the distribution and possible relationships of the fly.

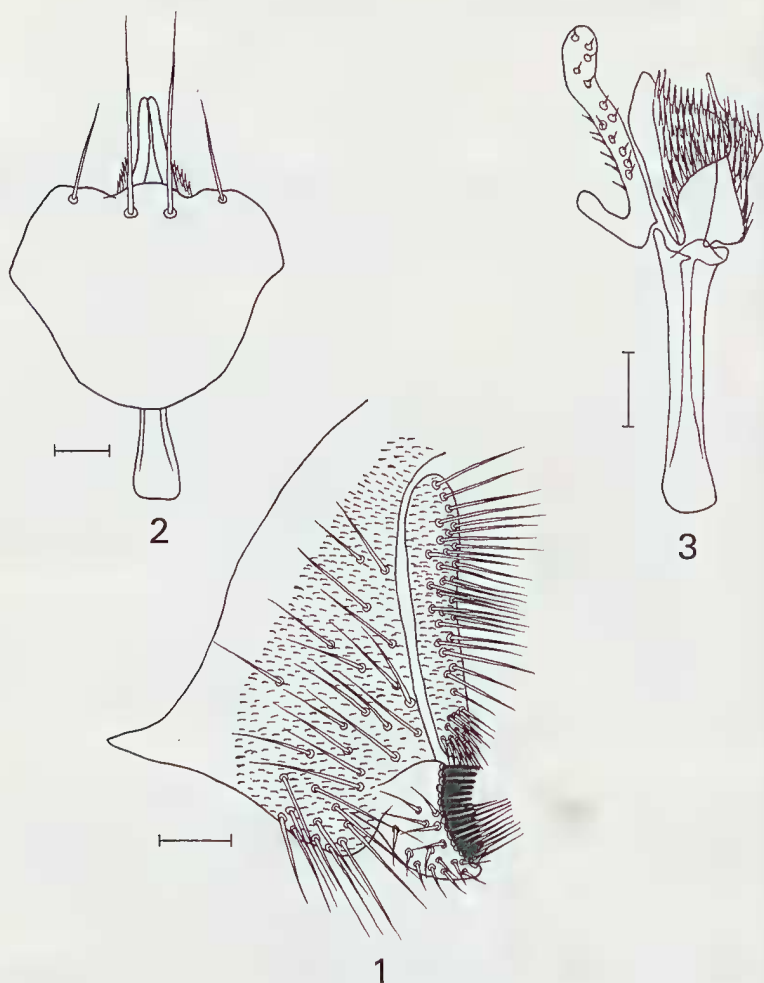
### Male genitalia

**External genitalia** (Fig. 1). Anal plate narrow and elongate, with lower cluster of bristles differentiated from upper setation, and general micropubescence. Clasper with row of close elongate rounded black teeth along medial border and additional bristles on both inner and outer faces, but without micropubescence. Genital arch with numerous large bristles and micropubescence in medial half-two thirds. Lower lateral portion of genital arch elongated.

**Internal genitalia** (Figs 2, 3). Hypandrium with pair of large submedian spines and additional pair of smaller bristles lateral to these. Aedeagus bifid, laterally compressed, apically rounded and expanded, with numerous spine-like protuberances. Aedeagal apodeme straight. Parandrites large, articulated to aedeagus, strongly sclerotized, elongate, with numerous very fine sensilla.

### Further records

QUEENSLAND: 1♂, Caloundra (26°8'S, 153°10'E), 28.viii.1929, F. A. Perkins (University of Queensland, Entomology Department collection). 2♂, 5♀, Glen Elgin HS, 18.xi.1977, attracted to banana bait in vicinity of *Opuntia* stands J. S. F. Barker; 1♀, Planet Downs HS (24°32'S, 148°53'E), 18.xi.1977, J. S. F. Barker; 5♀, Theodore (24°57'S, 150°05'E), 26.xi.1977, J. S. F. Barker (La Trobe University, Department of Genetics & Human Variation collection).



Figs 1-3. *D. albostrata*, male genitalia: (1) external genitalia; (2) hypandrium; (3) aedeagus and parandrite. Scales 50  $\mu$ .

### Discussion

The Australian *Drosophila* fauna is now known to comprise almost 100 species, or about 7% of the described world total. The four major subgenera of *Drosophila* (*Drosophila*, *Sophophora*, *Hirtodrosophila* and *Scaptodrosophila*) are represented amongst the fauna; ancestral forms of the subgenus *Scaptodrosophila*, which has speciated most widely and contains the majority of the Australian species, were presumably amongst the earliest drosophilid invaders of Australia.

Several clearly defined species groups are recognizable amongst the Australian *Scaptodrosophila* fauna (Bock and Parsons, 1978), while other species are too poorly known, or appear to be too aberrant, to permit recognition of their closest affinities. *D. albostrata* is unique amongst the Australian species in its coloration, black with two conspicuous longitudinal white stripes along the mesonotum, continued on the head along the orbital borders. Although the species is included in *Scaptodrosophila*, it is unusual in possessing very small prescutellar bristles and a minute middle sternopleural bristle (large prescutellars and large middle sternopleurals are present in most members of the subgenus). *D. albostrata* may thus not be related to any other species by coloration, but in the bristle reductions it is similar to *D. fumida* Mather. The latter species is widespread in southern Australia and occurs in both the eastern and western parts of the continent; it is distinguished, apart from its unusually small prescutellars and middle sternopleurals, by possession of patterned wings.

Superficially, *D. albostrata* and *D. fumida* thus appear to be quite dissimilar, but apart from the bristle reductions mentioned above, the male genitalia of *D. albostrata* are rather similar to those of *D. fumida* (Figs 79 and 80 in Bock, 1976). The most striking resemblances are in the external genitalia: the anal plates and the claspers are very similar, and the same unusual narrow extension in the lower lateral part of the genital arch is evident in both species. In the internal genitalia, the hypandrium of both species possesses more than the usual two large bristles and the parandrites of both species are very large, although the aedeagi of the two species are dissimilar. It is thus possible that, colour and pattern notwithstanding, *D. albostrata* and *D. fumida* share relatively recent ancestry, although both species are so unlike any others that further comments on their possible relationships would be highly speculative.

*D. albostrata* is quite unusual in a further respect. Endemic (and, in most cases, introduced) species of *Drosophila* in Australia are very rarely found under conditions of high temperature/desiccation stress. Some species have adapted to open forests, but on hot dry days the latter species are almost invariably only found in the immediate vicinity of creeks where desiccation stress is demonstrably lower (Parsons, 1975). Eidsvold, Theodore, and Glen Elgin and Planet Downs Homesteads both lie in a region of dry sclerophyll forest where summer temperatures are extreme, and indeed few native drosophilids are found (Barker, pers. comm.). It appears that *D. albostrata* may have adapted physiologically to climatic conditions beyond the tolerance range of that of most other Australian Drosophilidae. However, as for most other species of the latter, the natural history of *D. albostrata*, particularly the resources exploited by the larvae, remains unknown.

#### References

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- Parsons, P. A., 1975. The effect of temperature and humidity on the distribution patterns of *Drosophila inornata* in Victoria, Australia. *Environ. Ent.* 4: 961-964.